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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/933,987	08/21/2001	Jeffrey Alan Silvermail	UDC-22501	7653

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EXAMINER

ROY, SIKHA

ART UNIT	PAPER NUMBER
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2879

DATE MAILED: 03/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/933,987	Applicant(s) SILVERNAIL ET AL.	
	Examiner Sikha Roy	Art Unit 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 1947.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 and 31-41 is/are rejected.
- 7) ☒ Claim(s) 30 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The Amendment, filed on January 23, 2004, has been entered and is acknowledged by the Examiner.

Cancellation of claims 10,11 and new claims 33-41 have been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-5, 9,16,17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,081,071 to Rogers and further in view of U.S. Patent 5,866,978 to Jones et al.

Regarding claim 1 Rogers discloses (column 2 lines 45-65, column 3 lines 4-6 Fig. 10) an organic EL apparatus comprising a substrate 12, an organic electroluminescent device 13 comprising laminate structure of organic light emitting region deposited between anode and cathode (pair of electrodes) disposed over the substrate, a cover 11 generally constructed of glass or transparent material over the display area wherein cover permits transmission of light from pixels to outer environment and restricts transmission of oxygen and water from outer environment to the organic display area. Rogers further discloses desiccant 31 patterned near the

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perimeter seal of the cover, substantially avoiding obstructing and transmission of light from the pixels to the outer environment.

Claim 1 differs from Rogers in that Rogers does not exemplify the patterned getter layer comprising a plurality of narrow bands or a plurality of small dots of getter material.

Jones in pertinent art of getters in flat panel displays disclose (Figs. 2a, 2b column 9 lines 11-38) getter structure provided in the grid or matrix in the form of dots of getter material. It is to be noted that getter in the form of dots provides the advantage of suitably dispersed over the desired surface of the display panel.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to apply the patterned getter layer in the organic EL apparatus of Rogers in the form of dots as suggested by Jones for advantageously dispersing the getter material in the desired area.

Referring to claim 3 Rogers discloses the patterned getter (desiccant) layer 31 is provided on the cover.

Regarding claims 4 and 5 Rogers discloses (Figs. 1 and 2 column 4 lines 29,30) the patterned getter (desiccant) as a continuous ring is provided at a position that is laterally beyond and surrounding the OLED display area.

Regarding claim 16 Rogers discloses (Fig. 2 column 4 lines 37-54, column 5 lines 17-25) a sealing region 21 disposed between the substrate and the cover, the sealing region cooperating with the substrate and the cover to enclose the OLED device.

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Claim 17 recites the method of making the OLED apparatus with the same limitations as of the device structure claimed in claim 1 and hence is rejected for the same reason (see rejection of claim 1).

Regarding claim 9 Jones discloses (column 9 lines 30-38) the getter structure provided as dots is narrow (as it is arranged between the emitter groups). Referring to the recitation 'to prevent patterned getter layer from cracking', it is the position of the examiner that the subject functional language is inherent to the prior art structure as evidenced by the prior art structure's disclosure of all of the claimed structural limitations.

Claims 2, 12-15, 19, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,081,071 to Rogers and U.S. Patent 5,866,978 to Jones et al. and further in view of U.S. Patent 6,465,953 to Duggal.

Claim 2 differs from Rogers in that Rogers does not exemplify the patterned getter layer provided on the substrate.

Duggal in analogous art of electroluminescent devices discloses (column 8 lines 39,40) the getter material surface treated on the substrate. It is further noted that this getter material having particle size smaller than the characteristic wavelength of light emitted by the organic light emitting device maintains the substantial transparency of the substrate and protects the organic light emitting layer from being damaged by oxygen during a desired period of operation.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to provide the patterned getter layer of OLED device of Rogers and Jones on the substrate as taught by Duggal for protecting the organic light emitting layer from being damaged by oxygen during a desired period of operation.

Referring to claim 12 Rogers does not disclose the sublayers comprising hole transporting and electron transporting layers with the light emission layer.

Duggal discloses (column 4 lines 57-63) light emitting layer comprising hole transporting and electron transporting layers. Duggal further discloses these additional sublayers generally increase the efficiency with which the holes and electrons recombine to produce light.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include the hole transporting and electron transporting layers with the light emitting layer of the OLED device of Rogers as taught by Duggal to increase the efficiency of the device for producing light.

Regarding claim 13, Duggal discloses (column 1 lines 41-43) anode region, cathode region and the substrate can be transparent when it is desirable to allow light to be emitted from both sides of the device.

Regarding claims 14 and 15 Duggal discloses (column 1 lines 39-41) the electrode positioned on the surface of the light-emitting region is formed transparent and cause to transmit light outside. It is well known in the art that the position of the cathode and anode can be interchanged and hence with an opaque substrate when the cathode disposed over the light-emitting region is transmitting light it is transparent and

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when the anode disposed over the light-emitting region is transmitting light it is transparent.

Regarding claim 19 Rogers does not disclose getter layer comprising metal oxides provided in the form of a paste.

Duggal discloses (column 8 lines 19-25) materials for use as the 'getters' for water and/or oxygen can be alkaline earth metal oxides such as BaO, SrO, CaO and MgO. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include metal oxides such as BaO, CaO as suggested by Duggal inside the OLED device of Rogers as getters for absorbing water and/or oxygen and increasing the long-term stability of the device. Referring to the limitation comprising applying the getter in the form of a paste it is a well known method of producing layers on a substrate.

Regarding claim 20 the technique of applying the paste by screen printing and extrusion is commonly used in electronics industry to form a patterned layer as evidenced by U. S. Patent 5,849,442 to Liu et al.

Claims 7,8, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,081,071 to Rogers and further in view of U.S. Patent 6,383,664 to Bernius et al.

Claims 7 and 8 differ from Rogers in that Rogers does not exemplify patterned getter layer comprising material selected from Group IIA metals and metal oxides.

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Bernius in analogous art of protective packaging of optoelectronic devices with organic electroluminescent elements discloses (column 5 lines 64 – column 6 lines 7) getter film fabricated from Group IIA metals such as calcium, barium, magnesium. It is within the teaching of art that these metals are widely used as gettering material for trapping traces of moisture, oxygen and other contaminants.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to specify the desiccant used in OELD of Rogers as Group IIA metals as disclosed by Bernius since these metals are commonly used as gettering material for trapping traces of moisture, oxygen and other contaminants and selection of known material for a known purpose is within the skill of art.

Regarding claim 18 Bernius discloses the patterned getter layer is provided by vacuum deposition.

Claims 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,383,664 to Bernius et al. and further in view of U. S. Patent 6,081,071 to Rogers.

Regarding claim 21 Bernius discloses (column 3 lines 27-67, column 4 lines 28,29) organic optoelectronic device structure comprising a substrate, an organic optoelectronic device such as organic photodetector disposed over the substrate, a cover over the optoelectronic device and a patterned getter layer disposed between the substrate and the cover.

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Claim 21 differs from Bernius in that Bernius does not exemplify the patterned getter layer avoiding obstructing transmission of light to outer environment that is permitted by the cover.

Rogers in pertinent art of OLED apparatus disclose (column 3 lines 17-25, Figs. 1 and 3) the getter layer (desiccant) being patterned on the cover between the perimeter seals outside the display area and hence does not obstruct transmission of light through the cover.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to modify the getter layer deposited onto the cavity formed by the raised rim of the cover of Bernius on the cover near the perimeter seal as taught by Rogers to prevent obstructing transmission of light through the cover.

Regarding claim 22, phototransistors are optoelectronic devices as evidenced by U.S. Patent 6,420,031 to Parthasarathy et al.

Regarding claims 23 and 24 Bernius discloses the optoelectronic devices such as photodetectors, photovoltaics formed by sandwiching films comprising organic optoelectronic materials between electrodes.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,383,664 to Bernius and U. S. Patent 6,081,071 to Rogers and further in view of U. S. Patent 5,931,713 to Watkins et al.

Claim 25 essentially recites the same limitations of claim 21 and 6 and hence is rejected for the same reason (see rejection of claim 6).

Claim 26,38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,081,071 to Rogers and further in view of U.S. Patent 6,465,953 to Duggal.

Regarding claim 26 Rogers discloses all the limitations of claim 1 and also discloses (column 5 lines 60-65) the packaged electroluminescent apparatus include sealing structure such as glass, plastic plastic circuit boards.

Roger does not exemplify the substrate and the cover being flexible.

Duggal discloses (column 2 lines 20-22,49,50) plastic substrates can be mechanically flexible. It is to be noted that flexible substrate and cover for an organic EL device yield flexible display device which can be advantageously applied in different bendable surfaces.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include flexible plastic substrate and cover for organic EL element of Rogers as suggested by Duggal for providing the benefit of manufacturing flexible display which can be applied in bendable surfaces.

Claims 38-40 essentially disclose the same limitations as of claims 13-15 respectively and hence are rejected for the same reasons.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,081,071 to Rogers and U.S. Patent 6,465,953 to Duggal and further in view of U.S. Patent 6,383,664 to Bernius et al.

Claim 28 essentially recites the limitations same as of claim 7 and hence is rejected for the same reason.

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Claims 29,31 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,081,071 to Rogers and U.S. Patent 6,465,953 to Duggal and further in view of U.S. Patent 5,866,978 to Jones et al.

Claim 29 essentially recites the limitations same as of claim 9 and hence is rejected for the same reason.

Regarding claim 31 Jones disclose the getter in the forms of dots of getter material.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 6,081,071 to Rogers and U.S. Patent 5,866,978 to Jones et al. and further in view of U. S. Patent 5,931,713 to Watkins et al.

Regarding claim 6 Rogers and Jones do not disclose the patterned getter layer provided over the non-emitted regions between some of the pixels.

Watkins et al. in relevant art of display device disclose (claim 1 Fig.2) getter material 20 provided on the anode substrate forming a grille defining plurality of pixel regions 22. It is noted (column 1 lines 65-68, column 2 lines 1-8) this way gettering can be done efficiently and does not require additional space or additional component for housing.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to apply the gettering material in the space between the pixels as suggested by Watkins et al. in the OLED device of Rogers and Jones for more efficient gettering action and no additional space for housing the getter material.

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Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 6,081,071 to Rogers and U.S. Patent 6,465,953 to Duggal et al. and further in view of U. S. Patent 5,931,713 to Watkins et al.

Claim 32 recites the same limitations as of claim 6 and 26 and hence is rejected for the same reason.

Claims 27,33, 34 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 6,081,071 to Rogers and U.S. Patent 6,465,953 to Duggal and further in view of U. S. Patent 6,146,225 to Sheats et al.

Regarding claim 27 Rogers and Duggal do not disclose a composite barrier region comprising two or more planarizing layers and two or more high density layers.

Sheats et al. disclose (column 2 lines 17-26, column 3 lines 15-28, Fig 1) the barrier region preventing oxygen and moisture from penetrating inside includes two planarizing (polymer) layers 191,193 and high-density layers 192. It is noted that the planarizing layer provides exceptionally smooth low-defect surface for the application of the oxide (high density) layer and the high-density layer provides good barrier for water and oxygen.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to modify the flexible substrate or cover of the OLED device of Rogers with a composite barrier region comprising planarizing and high-density layers as taught by

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Sheats et al. for preventing water or oxygen from reaching the active layers of OLED device.

Claims 33, 34 and 36 essentially recite the same limitations as of claim 27 and hence are rejected for the same reason.

Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 6,081,071 to Rogers, U.S. Patent 6,465,953 to Duggal and U. S. Patent 6,146,225 to Sheats et al. and further in view of U.S. Patent 5,757,126 to Harvey et al.

Regarding claim Roger, Duggal and Sheats do not disclose the flexible cover comprising substrate-sublayer.

Harvey discloses (Fig. 5 column 5 lines 30-65) cover (sealing system)²² comprising substrate sub-layers 24(buffer layer), 26 (thermal coefficient matching layer) and 28 (silicon nitride layer). Harvey further discloses this configuration completely encapsulates or hermetically seals the array of the display.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include substrate sublayers in the flexible cover of Roger and Duggal as disclosed by Harvey et al. for hermetically sealing the array of the display.

Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 6,081,071 to Rogers, U.S. Patent 6,465,953 to Duggal and U. S. Patent 5,929,562 to Pichler.

Regarding claim 37 Rogers and Duggal do not disclose the flexible substrate comprising metal foil.

Pichler in analogous art of organic light emitting devices disclose (column 6 lines 1-5) flexible devices fabricated on flexible substrate such as metal foil.

The selection of known material for a known purpose is generally considered to be within the skill of art. It would have been obvious to use metal foil for flexible substrate of Rogers and Duggal because the selection of known material for a known purpose is generally considered to be within the skill of art.

Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 6,081,071 to Rogers and U.S. Patent 6,465,953 to Duggal and further in view of U. S. Patent 5,931,713 to Watkins et al.

Claim 41 essentially recites the same limitation as of claim 6 and hence is rejected for the same reason.

Allowable Subject Matter

Claim 30 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record neither teaches nor suggests a flexible OLED having all the limitations as claimed in claim 30 particularly the limitation comprising patterned getter layer comprising narrow bands of getter material.

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Response to Arguments

Applicant's arguments filed January 23, 2004 with respect to claims 1,17 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments filed January 23, 2004 with respect to claim 26 have been fully considered but they are not persuasive.

In response to applicant's argument that Rogers teaches substrate and cover for the electroluminescent material are constructed from rigid material, the examiner respectfully disagrees. Rogers discloses rigid substrates (column 3 lines 61-67) and also (column 5 lines 63-65) any preferred sealing structure such as glass, plastic, metal foils, plastic circuit boards used as cover and substrate. It is well known in the art as disclosed by Duggal and Pichler that plastic, metal foils can be flexible and used as flexible substrate.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (703) 308-2826. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (703) 305-4794. The fax phone number for the organization is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

S.R.

Sikha Roy
Patent Examiner
Art Unit 2879

Joseph Williams
Joseph Williams